

WHAT IS CLAIMED IS:

- 1 1. A hybrid circuit comprising
2 a substrate;
3 interconnects on said substrate;
4 a first IC die with electrical functionality, said first IC die being attached to
5 said substrate and having input and output signal leads connected to the said interconnects via
6 bonding mechanisms; and
7 programmable logic on said IC die, said programmable logic operative to
8 intercept selected ones of communication signals between said IC die and said substrate.
- 1 2. The hybrid circuit according to claim 1 wherein said substrate includes
2 active devices.
- 1 3. The hybrid circuit according to claim 2 wherein said substrate includes
2 programmable logic.
- 1 4. The hybrid circuit according to claim 3 wherein said programmable logic is
2 disposed to intercept said interconnects.
- 1 5. The hybrid circuit according to claim 1 wherein said programmable logic is
2 in response to external control signals applied to said programmable logic; and
3 said control signals are operative to modify electrical functionality and
4 connectivity of inputs and outputs connected to said programmable logic.
- 1 6. The hybrid circuit according to claim 1 further including redundant inputs
2 and outputs on the same IC die.
- 1 7. The hybrid circuit according to claim 1 wherein said IC die contains at least
2 two electrical functional units; and wherein
3 said programmable logic is operative to select one of the two electrical
4 functional units for connection to external outputs of the die under the control of control
5 signals.
- 1 8. The hybrid circuit according to claim 7 wherein said two functional electric
2 functional units are substantially identical in functionality.

1 9. The hybrid circuit according to claim 8 wherein said substrate includes
2 active circuitry.

1 10. The hybrid circuit according to claim 7 wherein power control is provided
2 which is operative to switch off power supply to a single one of said electrical functional
3 units.

1 11. The hybrid circuit according to claim 7 wherein said substrate further
2 includes active circuitry.

1 12. The hybrid circuit according to claim 7 wherein said control circuit is
2 operative to selectively cut off clock input to at least one said electrical functional unit.

1 13. A hybrid circuit comprising:
2 a substrate;
3 interconnects on said substrate;
4 an IC die on said substrate, said IC die having at least two functional units and
5 control logic connected to output terminals of said functional units and connected to
6 input/output terminals of said IC die; and
7 said control logic being operative to connect outputs of one selected functional
8 unit to selected input/output terminals of the IC die.

1 14 The hybrid circuit according to claim 13 wherein said two functional units
2 are of identical functionality.

1 15. An integrated circuit (IC) die for use in a hybrid circuit, said IC
2 comprising:
3 first and second functional electrical units;
4 multiplexer circuits connected to outputs of said first and second functional
5 units and to input/output terminals the IC die; and
6 a control logic capable of connecting outputs of a selected functional unit to
7 selected input/output ports of the IC die.

1 16. The integrated circuit according to claim 15 wherein said first and second
2 functional units are of identical functionality.

1 17. A hybrid circuit comprising:
2 a substrate;
3 interconnects on said substrate in form of wire bonds or solder balls;
4 an IC die with electrical functionality, said IC die being attached to said
5 substrate and having input and output signals connected to the said interconnects;
6 programmable logic on said substrate;
7 said programmable logic being operative to intercept input (output) signals to
8 said IC die.

1 18. A method for routing signals within a hybrid circuit on a substrate, said
2 substrate having interconnects on said substrate, an IC die with electrical functionality, said
3 first IC die being attached to said substrate and having input and output signal leads
4 connected to the said interconnects via bonding mechanisms, and programmable logic on said
5 IC die, the method comprising:
6 intercepting via said interconnects all communication signals between said IC
7 die and said substrate; and
8 switching via said programmable logic between individual ones of said
9 interconnects.

1 19. A method for routing signals within a hybrid circuit on a substrate, said
2 substrate having interconnects on said substrate, a first IC die with electrical functionality,
3 said first IC die being attached to said substrate and having input and output signal leads
4 connected to the said interconnects via bonding mechanisms, a second IC die with
5 electrical functionality, said second IC die being attached to said substrate and having input
6 and output signal leads connected to the said interconnects via bonding mechanisms, and
7 programmable logic on said IC die, the method comprising:
8 intercepting via said interconnects selected communication signals between
9 said first IC die and said substrate; and
10 switching signal lines via said programmable logic between first IC die and
11 said second IC die.